

REMARKS

This Amendment and Response is submitted in response to the Office Action mailed 23 JANURAY 2003. Withdrawal of the rejection and reconsideration with an eye toward allowance is respectfully requested.

Claim Status

Claims 11, 14, 19, 28-30, 36-40, and 43-48 are pending. Claims 11, 14, 19, 28-30, 35-38, 40, and 43-48 stand rejected. Claims 15, 20, 31-34, 41-42, 49, and 50 had been withdrawn until such a time as a generic claim is held allowable. Claims 11, 37, and 38 are amended herein. The claim amendments are presented in a revised format per the USPTO's announcement 'Amendments in a Revised Format Now Permitted', signed 31 January 2002, and accordingly do not conform to the current reading of 37 C.F.R. §1.121, which Applicants understand has been waived. Accordingly, a complete listing of all claims that are, or were in the application, along with an appropriate status identifier, is provided above in the section entitled "Amendments to the Claims". Markings are provided on claims amended in the present amendment.

Support for the above claim amendments and new claim can be found throughout the originally filed specification, claims, and drawings. For example, support for the amendment to claim 11 can be found at least in the specification at page 3, paragraph 8 and FIG. 7.

Claim Rejections – 35 U.S.C. §112

Claims 28-30, 35, 40, and 44-48 were rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The Examiner suggests that the specification does not adequately describe an asymmetrical response, as recited in claims 28-30. Applicants respectfully draw the Examiner's attention to the specification at page 111, paragraphs 6 and 7, which state, in part "In a preferred embodiment, the non-linear harmonic response is increased by inducing an asymmetrical response." Paragraph 7 states "Three examples of ways to perform this are :use an ETM molecule that gets degraded in the oxidized form, like luminol, use co-reduction or redox mediation, and use enzyme coupled mediation." If the Examiner continues to feel that the term "asymmetrical response" raises new matter and/or written description issues, Applicants respectfully request further explanation as to what description the Examiner feels is lacking.

The Examiner further suggests that the specification does not adequately describe an even harmonic component, as recited in claim 40. The Examiner's attention is respectfully drawn to the specification at page 96, paragraph 2, stating, in part "The techniques looks at the even harmonics where

the ratio of faradaic current to capacitance current is enhanced.” Applicants submit that the recitation of the term even harmonics is supported at least by the specification at page 96, paragraph 2. If the Examiner continues to feel that the term “even harmonics” raises new matter and/or written description issues, Applicants respectfully request further explanation as to what description the Examiner feels is lacking.

Further, the Examiner suggests that the specification does not adequately describe the method steps recited in claims 44-48. Claims 44-48 recite fitting a harmonic component to two curves – one describing a Faradaic signal, and the other a background signal. The Examiner’s attention is respectfully directed to the specification at page 103, last paragraph and page 104, first paragraph, which describe the fitting process recited in claim 44. Gaussian distributions and fifth-order polynomials, recited in claims 45 and 46 are supported in the specification at least at page 104, paragraph 1. Mean square error and singular value decomposition, recited in claims 47 and 48, are supported by the specification at least at page 106, paragraph 5, and page 107, paragraph 2. Accordingly, Applicants submit that adequate written description for claims 44-48 is found in the specification, and no new matter has been entered.

For at least the reasons described above, Applicants submit that the specification contains adequate written description for claims 28-30, 35, 40, and 44-48. Withdrawal of the 35 U.S.C. §112, first paragraph, rejection is respectfully requested.

Claims 11, 14, 19, 28-30, 35-38, 40, and 43-48 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner stated that claim 11 was rejected as vague and indefinite in view of the phrase “at least one of which comprises an assay complex”. Without admitting the propriety of the rejection, Applicants have amended claim 11 for technical clarity to recite a plurality of electrodes, “wherein at least one electrode comprises an assay complex”. Applicants respectfully submit that amended claim 11 is clear and concise, and the 35 U.S.C. §112, second paragraph, rejection of claim 11 should be withdrawn.

Claim 28 was rejected as vague and indefinite in view of the phrase “an asymmetrical response to said input waveform”. The Examiner was unclear as to what kind of response would be considered an asymmetrical response. Applicants respectfully submit that the term asymmetrical means not symetric, the term symetric being defined as “having corresponding points whose connecting lines are bisected by a given point or perpendicularly bisected by a given line or plane” (www.webster.com). A print out of the relevant definition is attached as Exhibit 1. Applicants respectfully submit that claim 28 is clear in referring to an asymmetrical response. Moreover, the Examiner’s attention is respectfully directed to the specification at page 111, paragraphs 6 and 7 which describe several embodiments of asymmetrical responses. For example, a molecule that is oxidized in response to an increasing input signal (‘upswing’) and not reduced on the downswing, may generate an asymmetrical response. Accordingly, Applicants

submit that the 35 U.S.C. §112, second paragraph rejection of claim 28 is improper and should be withdrawn.

Claim 35 was rejected as vague and indefinite because the Examiner was unclear as to what kind of enzyme-coupled reaction causes the asymmetrical response. Further, the Examiner stated that the phrase "due to" did not indicate how the enzyme-coupled reaction causes the asymmetrical response. Without admitting the propriety of the rejection, Applicants have cancelled claim 35, without prejudice or disclaimer towards presenting it in a related application. Accordingly, the rejection of claim 35 is obviated.

Claims 37 and 38 recite more than one harmonic component. The Examiner states that the recitation of more than one harmonic component is vague, as claim 11 recites only a harmonic component. Without admitting the propriety of the rejection, Applicants have amended claim 11 to recite 'at least one harmonic component'. Applicants respectfully submit that claim 37 refers to the harmonic component recited in claim 11. Claim 37 recites a group of harmonic components from which the harmonic component recited in claim 11 is chosen. The term 'harmonic component' refers to the components of the harmonic content as expressed in terms of the order and rms values of the Fourier series terms describing the periodic function. (see "The New IEEE Standard Dictionary of Electrical and Electronic Terms", Fifth Edition, 1993, p. 584, a copy of which is attached as Exhibit 2). Accordingly, Applicants submit that the terms first, second, third, fourth, fifth, sixth, seventh, eighth, ninth, and tenth harmonic components, as recited in claim 37 refer to harmonic components having different orders, as is known and understood in the art. Therefore, Applicants submit that claim 37 properly recites a plurality of harmonic components, from which the harmonic component recited in claim 11 may be selected. Therefore, Applicants submit that claim 37 is clear and concise, and the 35 U.S.C. §112, second paragraph, rejection of claim 37 is improper. Also, without admitting the propriety of the rejection, Applicants have amended claim 38 to recite "wherein the output waveform comprises a plurality of harmonic components". Applicants trust that the amendment to claim 38 obviates the rejection under 35 U.S.C. §112, second paragraph.

Claim 40 was rejected as vague and indefinite as to what kind of harmonic component can be considered as an even harmonic component. As discussed above, Applicants submit that harmonic components may be referred to by the order of the Fourier series terms. Accordingly even harmonics represent harmonic components corresponding to an even order term – such as second, fourth sixth, eighth, and the like. Accordingly, Applicants submit that claim 40 is clear, and the 35 U.S.C. §112, second paragraph, rejection should be withdrawn.

Claim 48 was rejected as vague and indefinite as being unclear in view of the phrase "said fitting said fifth order polynomial comprises". Without admitting the propriety of the rejection, Applicants have amended claim 48 to recite "said fitting comprises". Accordingly, Applicants submit that the 35 U.S.C. §112, second paragraph rejection of claim 48 should be withdrawn.

At least for the reasons discussed above, Applicants submit that the claims are clear and concise, and the 35 U.S.C. §112, second paragraph rejection of claims 11, 14, 19, 28-30, 35-38, 40, and 43-48 should be withdrawn.

Claim Rejections – 35 U.S.C. §102

As a preliminary matter, Applicants note that the changes made by the American Inventors Protection Act of 1999 (AIPA) to 35 U.S.C. §102(e) do apply to the present application, despite its filing date prior to November 29, 2000 due to the further amendment to 35 U.S.C. §102(e) by the Intellectual Property and High Technology Technical Amendments Act of 2002 (H.R. 2215). Accordingly, Applicants respectfully request that the application be examined under 35 U.S.C. §102(e) as amended by the AIPA.

Claims 11, 14, 36, and 43 were rejected under 35 U.S.C. §102(e) as being anticipated by Kayyem et. al. (U.S. Patent Number 6,232,062, filed August 14, 1997).

Kayyem discloses the use of AC signals, including a signal having an AC component and a DC component.

In contrast, Applicants' claim 11 recites analyzing a harmonic component of an output waveform where the harmonic component has a harmonic number greater than or equal to two.

As the Examiner is aware, for a reference to anticipate a claim, the reference must teach every element of the claim (see M.P.E.P §2131).

Applicants respectfully submit that Kayyem does not disclose all elements of Applicants' claim 11. In particular, Kayyem is silent as to the analysis of a harmonic component of an output signal with the harmonic number greater than or equal to two.

Claims 14, 36, and 43 depend from and include all limitations of Applicants' amended claim 11.

Accordingly, Applicants submit that the 35 U.S.C. §102(e) rejection of claims 11, 14, 36, and 43 is improper and should be withdrawn.

Double Patenting

Claims 11, 14, and 43 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-30 of U.S. Patent Number 6,232,062.

Applicants respectfully submit that the amendments to claim 11 have obviated the obviousness-type double-patenting rejection.

CONCLUSION

Applicants submit the claims are in condition for allowance, and notification of such is respectfully requested. If after review, the Examiner feels there are further unresolved issues, the Examiner is invited to call the undersigned at (415) 781-1989. While Applicant believes that no further fees are due at this time, the Commissioner is authorized to charge any fees that may be due as a result of filing this

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amendment, including additional claims fees not already paid for, or other fees that have not been separately paid, to Deposit Account 50-2319 (Order No. 463037-17 [A-65686-1/RMS/RMK/JML]).

Respectfully submitted,
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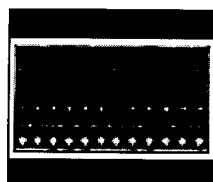
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Go

Main Entry: **sym·met·ri·cal**

Pronunciation: s&- 'me-tri-k&l

Variant(s): *or* **sym·met·ric** /-trik/

Function: *adjective*

Date: 1751

1 : having, involving, or exhibiting symmetry

2 : having corresponding points whose connecting lines are bisected by a given point or perpendicularly bisected by a given line or plane <*symmetrical curves*>

3 *symmetric* : being such that the terms or variables may be interchanged without altering the value, character, or truth <*symmetric equations*> <R is a *symmetric* relation if *aRb* implies *bRa*>

4 **a** : capable of division by a longitudinal plane into similar halves <*symmetrical plant parts*> **b** : having the same number of members in each whorl of floral leaves <*symmetrical flowers*>

5 : affecting corresponding parts simultaneously and similarly <*symmetrical rash*>

6 : exhibiting symmetry in a structural formula; *especially* : being a derivative with groups substituted symmetrically in the molecule
- **sym·met·ri·cal·ly** /-tri-k(&-) lE/ *adverb*

- **sym·met·ri·cal·ness** /-k&l-n&s/ *noun*

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hang-up hand telephone set (suspended-type handset telephone) (bracket-type handset telephone). A hand telephone set in which the mounting is arranged for attachment to a vertical surface and is provided with a switch bracket from which the handset is suspended. See: **telephone station**. [119]

hang-up signal (telephone switching systems). A signal transmitted over a line or trunk to indicate that the calling party has released. 312-1977w

HA1 receiver weighting (data transmission). A noise weighting used in a noise measuring set to measure noise across the HA1 receiver of a of a subset with a number 302 receiver or a similar subset. The meter scale readings are in the dBa (HA1). 599-1985w

hard copy (1) (supervisory control, data acquisition, and automatic control) (station control and data acquisition). A permanent record of information in readable form for human use, for example, reports, listings, displays, logs, and charts. C37.1-1987
(2) (computer applications) (computer graphics). A printed copy of computer output in a readable form; for example, a printed report, a listing. Contrast with: **soft copy**. 610.2-1987, 610.6-1991

hard cover. See: **conductor cover**. 516-1987

hard failure. A failure that results in complete shutdown of a system. Contrast with: **soft failure**. 610.12-1990

hard limiting (analog computers). See: **limiter circuit**. 165-1977

hard line (test, measurement and diagnostic equipment). Any direct electrical connection between the unit under test and the testing device. [2]

hardware (software). Physical equipment used to process, store, or transmit computer programs or data. Contrast with: **software**. 610.12-1990

hardware check. See: **automatic check**. 610.5-1990

hardware configuration item (HWCI). An aggregation of hardware that is designated for configuration management and treated as a single entity in the configuration management process. Contrast with: **computer software configuration item**. See also: **configuration item**. 610.12-1990

hardware design language (HDL). A language with special constructs and, sometimes, verification protocols, used to develop, analyze, and document a hardware design. See also: **program design language**. 610.12-1990

hardware monitor. (A) A device that measures or records specified events or characteristics of a computer system; for example, a device that counts the occurrences of various electrical

events or measures the time between such events. (B) A software tool that records or analyzes hardware events during the execution of a computer program. See also: **monitor**; **software monitor**. 610.12-1990

hardware (test, measurement, and diagnostic equipment). Circuitry with the absence of electrical elements, such as resistors, inductors, capacitors: circuits containing only wire and terminal connections with no intervening switching inherent. [2]

hardwired (supervisory control, data acquisition, and automatic control) (station control and data acquisition). The implementation of processing steps within a device by way of the placement of conductors between components within the device. The processing steps are not alterable except by modifying the conducting paths between components. C37.1-1987

(2) (hydroelectric power plants). Wired interconnections of relays and other control devices. 1020-1988

harmful interference (electromagnetic compatibility). Any emission, radiation, or induction that endangers the functioning, or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service or any other equipment or system operating in accordance with regulations. See: **electromagnetic compatibility**. [53]

harmonic (1) (converter characteristics) (self-commutated converters) (harmonic control and reactive compensation of static power converters). A sinusoidal component of a periodic wave or quantity having a frequency that is an integral multiple of the fundamental frequency. Note: For example, a component, the frequency of which is twice the fundamental frequency, is called a second harmonic. See: **characteristic harmonic**; **noncharacteristic harmonic**; **harmonic content**; **harmonic components**; **relative harmonic content**. 519-1981, 936-1987

(2) (data transmission). A sinusoidal component of a periodic wave or quantity having a frequency that is an integral multiple of the fundamental frequency. Note: For example, a component, the frequency of which is twice the fundamental frequency, is called the second harmonic. 599-1985w

harmonic analyzer. A mechanical device for measuring the amplitude and phase of the various harmonic components of a periodic function from its graph. See: **instrument**; **signal wave**; **wave analyzer**. [119]

harmonic components (converter characteristics) (self-commutated converters). The components of the harmonic content as expressed in terms of the order and rms (root-mean-square) values of the Fourier series terms describing the periodic function. 936-1987